

SYSTEM AND METHOD FOR LOADING AND SECURING EQUIPMENT MODULES TO A SHIP

FIELD OF THE INVENTION

The invention relates to the field of loading and securing equipment modules to ships. Specifically, it relates to loading equipment modules into the side of ships using skidding frames and releasably securing them to the ships.

BACKGROUND OF THE INVENTION

Ships used for military or industrial missions are expensive investments for nations and companies. The ships may also be highly specialized for specific tasks, i.e., military conflicts, research programs or offshore construction. As multiple of such ships may be required simultaneously but will rarely see continuous use, they are expensive and have a slow return of investment as the ships will often need to lie unused for prolonged periods of time.

Thus, it would be beneficial to be able to utilise such ships for multiple purposes by being able to exchange equipment on the ships. However, the equipment used is heavy duty such as canons or cranes and are often located in niches along the side of the ships and therefore the process of exchanging equipment is time consuming and expensive. Removing such massive equipment from a ship requires cutting open the hull of the ship to lift it out, even in situations where the equipment is located at the side of the ship as cranes are made for lifting upwards. Furthermore, every time a new piece of equipment needs to be mounted onto a ship, laborious preparations are necessary to determine how a new piece of equipment with a different shape and footprint can be mounted in the ship. The procedure itself also requires cutting free the old equipment and welding the new equipment in place. This procedure takes weeks or even months where the ship must be docked. Thus, any exchange of equipment is an investment in time and finances and will usually need to be a long-term change.

SUMMARY OF THE INVENTION

In accordance with the invention, some of the above-mentioned difficulties are alleviated by providing a system and method for quickly and easily loading and offloading different equipment modules onto a ship and securing them on the vessel

thereby making it possible to use the same ship for different yet highly specialised purposes.

The above object and advantages, together with numerous other objects and advantages, which will be evident from the description of the present invention, are according to a first aspect of the present invention obtained by: a system for connecting equipment to a mounting surface of a sea vessel, such as a ship or submarine or any other marine vessel, the system comprising:

- a skidding frame comprising a frame body, the frame body comprising an upper and a lower surface,
- a mounting footprint secured to the mounting surface and adapted to releasably engage the lower surface of the skidding frame, and
- one or more equipment modules for containing equipment, wherein the one or more equipment modules are adapted to be attached to the upper surface of the skidding frame, whereby the equipment modules are indirectly connected to the mounting surface via the skidding frame.

The skidding frame provides a support for the equipment modules that allows multiple modules to be connected and moved as a unit. The skidding frame further eases the movement of these equipment modules which may be loaded with heavy equipment with a mass of several tonnes and are otherwise difficult to fit into the intended locations.

The mounting footprint is adapted to receive the skidding frame so that it can be secured to or integrated in the mounting surface and there is no risk of unintentional movement of the skidding frame or the equipment modules.

The mounting footprint may be integrated in various types of mounting surfaces. For example, the mounting footprint may be integrated in a mounting surface in the niche of a ship where equipment modules may be loaded into and out of said ship niche from the side using this skidding frame and subsequently be held in place on the ship. The mounting footprint may be integrated on elevation means that can be used to raise and lower the skidding frame and equipment modules and where the

mounting footprint ensures that the skidding frame and equipment modules are thoroughly secured and do not risk falling off the elevation means.

When the mounting footprint is integrated in a mounting surface on a ship it has the
5 additional benefit that any sideways force exerted by equipment mounted in the ship
through the skidding frame and mounting footprint is transferred into the hull of the
ship through the points where the skidding frame engages the mounting footprint.
This allows the system to be subjected to large forces in a direction out of the side
of a ship without needing to reinforce or remodel the ship in accordance with the
10 specific use of the equipment installed in the side of the ship, e.g. gangways
extending out of the side of the ship or cranes needing to lift or lower things along
the side of the ship. Not needing to retrofit or reengineer the ship to be able to handle
equipment exerting force on the ship in different directions makes it possible to
significantly lower the time and cost associated with exchanging equipment in the
15 ship and make it compatible with equipment with vastly different uses.

Preferably both the skidding frame and the mounting footprint will be made to
conform to specific standards, thereby providing compatibility of many different
types of equipment as long as they are contained within equipment modules as this
20 will ensure that they can fit onto a mounting surface prepared with a mounting
footprint. This makes it possible to make preparations of the equipment off-ship, i.e.,
mounting it in an equipment module and greatly reduces the time a ship will need to
stay docked for the equipment to be loaded onto the ship and secured in place.
Depending on the size and amount of equipment modules needed to be loaded onto
25 the ship this will take as little as 1-2 days rather than weeks or months conventionally
required to retrofit a ship with equipment which has to be secured in a manner
engineered to that specific ship.

In a further embodiment according to the first aspect of the invention, the equipment
30 modules are permanently attached to the upper surface of the skidding frame.

Having the skidding frame fully integrated in the upper surface of an equipment
module is beneficial where the equipment modules is intended to be used
specifically in places where there are mounting footprints present for the skidding

frame to be secured to. Having the equipment modules integrated with the skidding frame further increases the stability of the system and minimises the amount of preparation and interaction which is necessary to ready the combined system for transport or deployment. Furthermore, minimising the amount of securing means
5 necessary for releasably attaching the equipment module to the skidding frame may lower the price of the combined system.

The benefits of having equipment modules permanently attached to the upper surface of the skidding frame are relevant for equipment modules that will always
10 be used or stored in places where mounting footprints are present, e.g., equipment modules that are always intended to be used mounted on a ship and will not intermittently need to be used from land. This may be relevant for example for equipment modules with equipment in the form of gangways, smaller boats or submarine drones that will not need to be used on land.

15 In a further embodiment according to the first aspect of the invention, the equipment modules are releasably attached to the upper surface of said skidding frame through securing means.

20 Allowing the equipment modules to be releasably connected to the skidding frame lets the equipment modules intermittently be used independently of the skidding frame and mounting footprints. As it is possible to remove the equipment modules from the skidding frame, they can be placed at their final location without any need for further securing means or other adaptation of the final location. This is
25 particularly important if the equipment modules contain equipment that is intended for a final destination away from a ship and even more so in regard to relief effort where the equipment may be needed in regions where it has not been possible to prepare by providing mounting footprints. This may for example be the case where equipment modules contain accommodations, portable laboratories, pre-hospital
30 set-ups or temporary office space.

Having the equipment modules be releasably connected to the skidding frames can also be beneficial for equipment modules with equipment primarily intended to be used on vessels as it may be preferable to store the equipment modules detached

from skidding frames to be able to use the skidding frames for other equipment modules and store the presently unused equipment modules in storage spaces without mounting footprints.

- 5 Furthermore, skidding frames that can be detached from equipment modules can also be attached to each other, thereby making it easier to transport stacks of skidding frames to the locations where they are needed.

10 In a further embodiment according to the first aspect of the invention, the equipment modules or multiple equipment modules are releasably attached to the upper surface of the skidding frame.

In a further embodiment of the invention, the multiple equipment modules are releasably attached to each other using securing means.

15 A single skidding frame may be dimensioned such that it can accommodate multiple equipment modules which may be placed side by side on the skidding frame or be stacked on top of each other. Being able to releasably attach said equipment module to each other provides the benefit of more flexibility in what equipment is available in the mounted system. Depending on the mission for which the equipment modules
20 are needed multiple types of equipment may be required and by providing modules that can be releasably attached and connected to the same skidding frame it is possible to choose the most relevant equipment for each use case. Furthermore, the modularity allows some type of equipment modules to synergistically be used with multiple other equipment modules, for example the same holder or stabilising
25 means may be used for multiple smaller vessels or some part of a launch and recovery system may be used for different types of drones while other parts may be exchanged as necessary to accommodate specialised requirements for example for flying or sailing drones, or they may be attached to analysing equipment relevant for processing gathered samples.

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Being able to reliably attach multiple equipment modules to each other using securing means allows the system to remain stable and secure regardless of the number of equipment modules used, such that the modularity and customisability does not come at the cost of security.

Preferably the same securing means are used for releasably attaching the equipment modules to each other and attaching them to the skidding frame. This makes it easy and convenient for the users to handle as it is only required to know
5 how to use one type of securing means and there is no risk of accidentally using the wrong securing means in the wrong location. It is also preferable for the securing means to be of a known type that may be standardised and readily available.

In a further embodiment according to the first aspect of the invention, the mounting
10 footprint comprises a number of anchoring points and the skidding frame comprises a number of engaging anchoring points.

The anchoring points help ensure that the skidding frame is guided to the correct position on the mounting surface and further provide a place for securing means to
15 engage. The anchoring/securing points may comprise structures following container corner standards embedded in the mounting surface such that securing means compatible with container corners can readily be used. In other variants, the anchoring points are not container corners but other structures capable of engaging securing means in the form of twist locks. In one variant, the anchoring points may
20 be deck sockets known from the shipping container industry.

In a further embodiment according to the first aspect of the invention, the anchoring points comprises the securing means.

25 The securing means allow the skidding frame to be secured to the mounting surface such that any movement of the skidding frame is eliminated.

In a further embodiment according to the first aspect of the invention, the securing means are twist locks.

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Twist locks are well known from the shipping container industry and many types are made to conform to the same standards, e.g., to be usable with ISO 1161 standard container corners. Using twist locks as the securing means in the system of the invention thus has the benefit of wide availability of both components and knowledge

of how to use them making it easy to train personnel in securing the equipment modules and skidding frames.

Furthermore, using twist locks as securing means provides the possibility of making
5 equipment modules and skidding frames compatible with well-known shipping containers. Such compatibility makes it possible to have goods that does not need to be used during transport stored in shipping containers alongside equipment modules that allow easy access to the equipment.

10 In a further embodiment according to the first aspect of the invention, the skidding frame comprises a frame body, having two or more parallel battens and two or more parallel frame beams, the battens being substantially perpendicular to said beams.

The beams and battens of the skidding frame provide a stable structure which allows
15 the skidding frame to function as a support for heavy objects such as heavy equipment, containers or equipment modules.

In a further embodiment according to the first aspect of the invention, the frame body
20 comprises a number of said anchoring points arranged at corners of said frame body.

In a further embodiment according to the first aspect of the invention, the frame body
25 comprises a number of anchoring points arranged on the battens and/or the frame beams between the corners of the frame body.

Arranging the skidding frame with anchoring points in a number of locations, such
as at the corners and/or on the battens and/or the beams between the corners provides a versatile skidding frame where single or multiple equipment modules may be connected to the entire surface area of the skidding frame, or single or multiple
30 containers be connected only to a part of the surface of the skidding frame, as also illustrated in the figure 4a.

In a further embodiment according to the first aspect of the invention, the skidding frame consists of a multiple of sections, the sections being smaller skidding frames that can be disconnected and connected.

- 5 Each section is in itself a skidding frame and these can be combined to create a larger skidding frame consisting of multiple sections. Being able to divide a skidding frame into smaller skidding frames for each section and connecting them again offers more versatility. If smaller equipment modules are needed, having a smaller skidding frame, e.g., by being able to disconnect the sections not supporting any
- 10 equipment modules, allows the system mounted in the sea vessel to have the least possible weight. Furthermore, having modularity in the sections of the skidding frames also makes it possible to make production lines more efficient as it is possible to produce fewer variants of the skidding frames as they can subsequently be connected for different dimensions, rather than needing a separate production of
- 15 each size of skidding frame. Additionally, being able to divide skidding frames into smaller sections can make the skidding frames easier to transport and store as they can be connected or disconnected to best fit the area in which they are to be stored.

According to a second aspect of the present invention, the above objects and

20 advantages are obtained by: a skidding frame for supporting container modules which comprises:

- a frame body, comprising two or more parallel battens and two or more parallel frame beams, said battens being substantially perpendicular to said beams, and
- 25 - a plurality of anchoring points.

The beams and battens of the skidding frame provide a stable structure which allows the skidding frame to function as a support for heavy objects such as heavy equipment, containers or equipment modules.

- 30 Container corners are known from the shipping container industry and are commonly made to follow ISO standards. Container corners provide a means for easily securing various types of loads, such as shipping containers or container modules to the skidding frame. By using commonly known container corners the skidding frame is compatible with known securing means such as twist locks,

compatibility makes it cheap and easy to use and people having experience working with shipping containers will be able to handle the skidding frame with a minimum of additional training.

- 5 Having container corners on the skidding frames make it possible to releasably secure equipment modules or containers to them as well as allowing the skidding frames themselves to be secured to securing points where similar known equipment can be used, e.g. further container corners and securing means such as twist locks. Multiple skidding frames can also be stacked and secured to each other using the
10 container corners and securing means making it easier to transport a number of skidding frames together.

The battens may comprise a plurality of wheels protruding from the underside of the battens which enables easy movement of the skidding frames. Alternatively, the
15 plurality of wheels may be provided on or in the footprint or on lifting means for loading the equipment module to a mounting surface of a sea vessel This possibility of movement allows the skidding frame and items potentially attached to it to be transferred to areas of limited space. As the skidding frame can be moved linearly in the direction that the wheels roll, it is possible to roll the skidding frame and
20 anything attached to it into a space no larger than allowing the minimum clearance of the skidding frame and attachments. This is a significant benefit as it is currently necessary to have additional space to load heavy equipment or containers onto vehicles and vessels thereby limiting how they can be transported. Normally it is required to use a crane to load heavy equipment and containers into transportation
25 or to put them in place where they are to be used, this means that it is necessary to have open space above the position where a load such as shipping containers or equipment modules are placed. The requirement of open space limits where the load can be placed or requires cumbersome and expensive modification of the target area.

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The ability to move shipping containers or equipment modules sideways is for example particularly beneficial in the context of specialised ships such as war ships which will commonly have specialised equipment such as weapons systems located in niches along the side of the ship. With conventional equipment systems it would

commonly be necessary to remove any part of the ship above the niche to be able to exchange the heavy equipment placed within the ship niche and the placement and securing of new equipment has to be thoroughly engineered and designed to fit the particular ship. This is a cumbersome and expensive procedure which in
5 practice means that the equipment will rarely be exchanged for short periods of time and frequently exchanging for example between two types of operation is rarely worthwhile.

With the skidding frame it is possible to load and unload heavy equipment adjacent
10 to the intended location rather than from above. This will for example allow the skidding frames with shipping containers or equipment modules to be loaded and offloaded from a quay into a ship's niche or in other variants even loading the skidding frames with equipment modules from a loading ship to a ship where it is needed.

15 The plurality of raising means allows the skidding frame to be raised above the surface it is standing on. When the raising means are extended the skidding frame will rest only on the raising means rather than on the wheels. This makes it possible to use the skidding frame along with securing means that are protruding from the mounting surface, e.g., twist locks that engage container corners by extending into
20 hollows inside the container corners. If the skidding frame could not be raised it could not pass the position of the securing means that protrude from the mounting surface and it would also not be possible to remove them from under the skidding frame once it needs to be detached from its secured position. The raising means
25 allows the skidding frame to be raised above the underlying surface such that securing means can be removed or placed under the skidding frame before it is once again lowered and can be moved along the now cleared up surface.

Raising means may be integrated with the plurality of wheels. In such a variant of
30 the invention the raising means will raise the frame body of the skidding frame above the mounting surface while the plurality of wheels is still engaging the mounting surface. In such a variant it is possible to translate the skidding frame while the frame body is raised. This will for example allow it to pass securing means or other elements that protrude from the mounting surface, as long as they are not protruding

any higher than the raising means can raise the frame body and that those protruding elements are not located where the wheels are engaging the mounting surface to move the skidding frame to and from the place where it is supposed to be mounted.

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In another variant, the raising means do not need to be comprised in the skidding frame. Instead, the mounting footprint may comprise raising means for engaging and raising the skidding frame. Such footprint raising means could be activated to protrude upwards from the mounting footprint. As the footprint raising means
10 engage the skidding frame, they will raise the skidding frame above the mounting footprint and allow elements protruding from the mounting footprint, such as securing means, to be removed from under the skidding frame. The footprint raising means can then be retraced back down into the mounting surface and thereby lowering the skidding frame back onto the mounting surface. In such variants where
15 the raising means are located in the mounting footprint, the skidding frame may have raising points adapted to engage the footprint raising means such as indents or regions of a different material helping the footprint raising means to securely engage the skidding frame such that it does not risk moving while the footprint raising means are protruding from the mounting footprint.

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In yet another variant, the raising means are integrated in neither the skidding frame nor the mounting footprint, rather the raising means are external and may releasably engage the skidding frame to raise it above the mounting surface. In such a variant the raising means may take any form and will simply need to be placed such that
25 they can raise the skidding frame once it is in the intended spot. Once the skidding frame has been raised and lowered the raising means can once more be removed. By having the raising means be separate from the skidding frame it is possible to simplify the skidding frame and not require any electronics or hydraulics on the skidding frame itself.

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The raising means may be hydraulic jacking cylinders. Hydraulic jacking cylinders are well known and readily available raising means, making them cheap and practical to use. Jacking cylinders are also known and well-tested to be able to handle heavy loads of several tons as may be necessary for many types of

equipment modules. The skidding frame is capable of handling loads exceeding 100 tons.

5 In some variants, the raising means will be hydraulic jacking cylinders. In these cases, the skidding frame may have a hydraulic system integrated. It may be located inside the beams and battens or be mounted to the outside of those beams and battens, or it may be an external unit preferably on a structure with wheels allowing it to translate along with the skidding frame. Preferably such hydraulic systems should not be located on the upper or lower surfaces of the skidding frame as they
10 would then risk getting damaged by the surface on which the skidding frame is placed or by equipment modules attached to the upper surface.

In a further embodiment, the plurality of wheels is motor driven. Having the plurality of wheels be motor driven allows the skidding frame to be moved without any
15 additional external force pushing or pulling the skidding frame and equipment modules attached to it. Having the plurality of wheels be motor driven thus minimises the need for external equipment. It further provides the opportunity for automating the use of the skidding frame for loading and offloading equipment modules to a mounting surface.

20 Motor components and power may be integrated into the skidding frame. Preferably these components are located inside the beams and battens or mounted to the outside of those beams and battens without protruding from the upper or lower surfaces of the skidding frame. If they were protruding, they would risk getting
25 damaged by the surface on which the skidding frame is placed or by equipment modules attached to the upper surface.

In an embodiment, the skidding frame comprises a receiver for processing remote control signals.
30 Having a receiver for remote control signals allows the remote control of the skidding frame, e.g., remote activation of the raising means and/or motor driven wheels.

In other variants, the skidding frame may further comprise one or more processing units. The one or more processing units would allow programming of the tasks that would otherwise be remote controlled.

- 5 In yet another variant, the skidding frame may comprise sensors. Sensors may be used to determine when the skidding frame is in the correct position to activate the raising means and/or start and stop the activation of the motor to move the skidding frame.
- 10 In a further embodiment of the second aspect of the invention, the frame body comprises a number of anchoring points arranged at corners of said frame body and a number of anchoring points arranged on said battens and/or said frame beams between said corners of said frame body.
- 15 Arranging the skidding frame with anchoring points in a number of locations, such as at the corners and/or on the battens and/or the beams between the corners provides a versatile skidding frame where single or multiple equipment modules may be connected to the entire surface area of the skidding frame, or single or multiple containers be connected only to a part of the surface of the skidding frame, as also
- 20 illustrated in the figure 4a.

According to a further embodiment of the second aspect of the invention, the skidding frame consists of a multiple of sections, being smaller skidding frames, that can be disconnected and connected.

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- As disclosed earlier, each section is in itself a skidding frame, and these can be combined to create a larger skidding frame consisting of multiple sections. Being able to divide a skidding frame into smaller skidding frames for each section and connecting them again offers more versatility. If smaller equipment modules are
- 30 needed, having a smaller skidding frame, e.g., by being able to disconnect the sections not supporting any equipment modules, allows the system mounted in the sea vessel to have the least possible weight. Furthermore, having modularity in the sections of the skidding frames also makes it possible to make production lines more efficient as it is possible to produce fewer variants of the skidding frames as they

can subsequently be connected for different dimensions, rather than needing a separate production of each size of skidding frame. Additionally, being able to divide skidding frames into smaller sections can make the skidding frames easier to transport and store as they can be connected or disconnected to best fit the area in which they are to be stored.

According to a third aspect of the present invention, the above objects and advantages are obtained by: a mounting footprint which comprises:

- one or more anchoring points, and
- one or more securing means adapted to be releasably mounted in said anchoring points and adapted for engaging container corners.

As disclosed above, the anchoring points help ensure that the skidding frame is guided to the correct position on the mounting surface and further provide a place for the securing means to engage. The anchoring/securing points may comprise structures following container corner standards embedded in the mounting surface such that securing means compatible with container corners can readily be used. In other variants of the invention the anchoring points are not container corners but other structures capable of engaging securing means in the form of twist locks. In one variant of the invention the anchoring points may be deck sockets known from the shipping container industry.

As disclosed above, the securing means allow the skidding frame to be secured to the mounting surface such that it will not risk moving if the mounting surface moves, e.g., if the mounting surface is on a sea vessel or vehicle the skidding frame does not roll on the plurality of wheels due to gravity as the mounting surface shifts. In a variant of the invention the securing means of the mounting footprint are standard twist locks known from the shipping container industry.

When the mounting footprint comprises a rail, it helps guide the movement of the skidding frame. The rail may provide a surface suitable for the wheels to roll on, e.g., have the surface be even and provide a good friction for the wheels to roll. In preferred variants of the invention the rail will comprise either rail guards that ensure that the wheels cannot move off the rail but will be guided in the intended direction or rail trenches that engage the wheel to guide its direction of movement.

According to a fourth aspect of the present invention, the above objects and advantages are obtained by: a method of sideways loading a skidding frame for supporting equipment modules, onto a mounting surface of a sea vessel, such as a ship or submarine or any other marine vessel, and securing it to a mounting footprint of said mounting surface, said method comprising the steps of:

- securing said skidding frame to elevation means, such as a lift,
- subsequently raising said elevation means to elevate said skidding frame to a level above said mounting surface,
- once said skidding frame is at a level above said mounting surface, sideways conveying said skidding frame onto said mounting footprint,
- engaging securing means to secure said skidding frame to said mounting footprint of the mounting surface.

This method of sideways loading has the benefits of making it possible to load massive equipment modules into spaces having only the required clearance to contain the equipment module and having an opening in the side through which the skidding frame and equipment module can enter. It is not necessary to have excessive space or have free space above the mounting surface to be able to do sideways loading according to this method. As such the method provides quick and easy means of loading and off-loading in spaces that would otherwise need to be modified to receive massive equipment modules that may have dimensions similar to multiple shipping containers and weigh several tons.

Furthermore, the method allows the skidding frame with equipment modules to be releasably secured to the mounting surface of the ship, thereby making it easy to remove the skidding frame once more and to exchange it with another skidding frame with completely different equipment in the equipment modules as long as the equipment modules themselves are compatible with the skidding frame fitting the mounting footprint.

SHORT LIST OF THE DRAWINGS

In the following, example embodiments are described according to the invention, where:

Fig. 1 shows a ship with equipment modules in ship niches.

Figs. 2-7 show different steps in the process of loading a ship niche in accordance with the invention.

Fig. 8 shows a skidding frame in perspective.

5 Fig. 9 shows the lower surface of a skidding frame.

Fig. 10 shows a close-up of a corner of a skidding frame in perspective.

Figs. 11a and 11b show a skidding frame with equipment modules mounted and a close-up of the securing of the equipment modules.

DETAILED DESCRIPTION OF DRAWINGS

10 The present invention will now be described more fully hereinafter with reference to the accompanying drawings, in which exemplary embodiments of the invention are shown. The invention may, however, be embodied in different forms and should not be construed as limited to the embodiments set forth herein. Rather, these
15 and will fully convey the scope of the invention to those skilled in the art. Like reference numerals refer to like elements throughout. Like elements will thus not be described in detail with respect to the description of each figure.

Fig. 1 illustrates a ship 1, in this case a war ship, with ship niches 5 in the side of the hull of the ship 1. Equipment modules 50 (see Figs. 4a and 4b) may be placed
20 in these ship niches, such equipment modules may in the case of a war ship for example be weapons units or smaller vessel.

The ship niches 5 may be equipped with niche hatches 7 that allow the ship niches 5 to be closed off to keep the ship niches 5 and equipment modules 50 shielded from the environment and from view. In addition, such niche hatches 7 may be
25 engineered to redirect incoming radar signals thereby shielding equipment inside the niches from being detected.

Fig. 2 shows a close-up of the side of a ship 1 near the ship niche 5 for a ship 1 moored next to a quay 10. The niche hatch 7 is opened allowing access to the ship

niche 5 which is currently not loaded. The ship 1 is moored such that the ship niche 5 is aligned with elevation means 15 build into the quay 10.

In other embodiments, the elevation means 15 need not be built into the quay 10 but may instead be part of a vehicle or ship allowing the position of the elevation means 15 to be adjusted with respect to the ship niche 5. In other variants multiple elevation means 15 may be used in cooperation to be able to further adjust the alignment between the elevation means 15 and the ship niche 5.

The elevation means 15 is equipped with a mounting footprint 200' and the ship niche 5 also has a mounting footprint 200 located at the mounting surface 6 in the bottom of the niche. In a preferable embodiment the mounting footprint 200 is embedded in the mounting surface 6 as is illustrated on the elevation means. In other embodiment the mounting footprint 200 may be retrofitted to a mounting surface 6 by adding the mounting footprint onto the existing mounting surface 6, e.g., by welding it onto the mounting surface 6 as illustrated inside the ship niche 5.

The mounting footprint 200 comprises two or more mounting rails 210 and two or more anchoring points 215 in which securing means 220 (see Fig. 11b) may be installed. In a preferred embodiment, the anchoring points are standard container corners 110 (see Fig. 3) and the securing means 220 are standard twist locks for shipping containers. Using known twist locks as securing means 220 has the benefit of making it easy for people used to work with shipping containers to mount and secure the skidding frame to the mounting footprint 200. Furthermore, compatibility with standard equipment known from the shipping container industry makes it cheap to use the mounting footprint 200.

Fig. 3 shows the skidding frame 100 mounted to the elevation means 15 on a quay 10. The skidding frame 100 comprises two or more frame beams 120 that are substantially parallel to the side of the moored ship 1 when the skidding frame 100 is mounted on the elevation means 15 and will remain substantially parallel to the side of the ship 1 once the skidding frame 100 is mounted inside the ship niche 5. The skidding frame further comprises two or more frame battens 130 which are substantially perpendicular to the beams 120 and thus also to the side of the moored ship 1.

In other embodiments, the beams 120 and battens 130 may be positioned at an angle with respect to the ship 1. The beams 130 may then be at an angle with respect to the side of the ship 1 rather than being substantially parallel, this may for example be beneficial for ship niches extending into the ship at an angle. In such
5 embodiments the battens 130 also do not need to be perpendicular to the side of the ship. In some embodiments, there may be battens 130 that are not perpendicular to the beams 120 they may all be at an angle to each other, or some may be perpendicular while others are at an angle for increased structural stability.

The underside of the battens 130 is equipped with a plurality of wheels 135 (see
10 Fig. 9) which will engage the mounting rails 210 of the mounting footprint 200' when the skidding frame 100 is mounted on the elevation means 15, thus the battens 130 of the skidding frame 100 are to be aligned with the mounting rails 210 of the mounting footprint 200'. In a preferred embodiment, the mounting footprint 200,200' comprises the same number of mounting rails 210 as the skidding frame 100
15 comprises battens 130. However, in other embodiments, there may be more or fewer mounting rails 210 than there are battens 130 allowing the mounting footprint 200,200' to be compatible with various embodiments of the skidding frame 100.

The skidding frame 100 further comprises container corners 110. In a preferred embodiment these container corners 110 are based on industry standards for
20 shipping containers, i.e. ISO container corner fittings, thereby making the skidding frame 100 and equipment modules (not shown) compatible with common shipping containers. This has the benefit of allowing regular shipping containers to be mounted to the skidding frame 110 same as specialised or customised equipment modules 50. Furthermore, it makes the skidding frames 100 compatible with
25 standard equipment known from the shipping container industry, such as known securing means 220 such as twisting locks which can be used to secure the skidding frame 100 to the mounting footprint 200. The container corners 110 also allow several skidding frames 100 to be stacked and secured to each other for easy transportation.

30 In a preferred embodiment, the skidding frame 100 is secured to the elevation means 15 by twist locks engaging the container corners 110 and the anchoring points 215. In other embodiments, the other securing means 220 may be used to engage the container corners 110.

In a preferred embodiment the mounting footprint 200' on the elevation means 15 and the mounting footprint 200 in the ship niche 5 are identical in the comprised components although they may be mounted differently to the mounting surface 6. Preferably the mounting footprint 200 is embedded in and being substantially flush
5 with the mounting surface 6 aside from the securing means 220. However, in other embodiments, they may differ, e.g., in the number of anchoring points 215 and securing means 220 and/or number of mounting rails 210 or in the materials used for the mounting rails 210.

Fig. 4a is a conceptual sketch of a single equipment module 50 being mounted to a
10 skidding frame 100 which is in turn mounted to the mounting footprint 200' on the quay 10.

The equipment module 50 is illustrated simply as outer module settings 52 and module floor 54 as it may take many different forms in regard to equipment contained in the equipment module 50 depending on the use. In a preferred
15 embodiment, equipment modules 50 comprise a module setting 52 and a module floor 54. The module setting 52 allows for structural stability and allows for the connection and stacking of multiple equipment modules 50, 50', 50'' as shown in Fig. 4b. The equipment modules 50 further comprises container corners 110 that allows the equipment modules 50 to be connected to each other as well as to the skidding
20 frame 100 through the use of securing means 220 (see Fig. 11b) such as twist locks.

In some embodiments the equipment modules 50 may further comprise walls effectively giving them an outer structure as a regular shipping container. This is preferable in cases where the equipment modules are used for transporting equipment such as in cases where the ship 1 is modified to be used for humanitarian
25 aid to bring medicine and other relief equipment or for freezer storage units that require thermal insulation. It could also be in the case where the equipment module is used for various types of accommodation, e.g., for transportable laboratories, pre-hospital facilities or for housing in the form of transportable kitchens or office space.

In other embodiments the equipment modules 50 have things placed resting on and
30 fixed to the module floor 54, e.g., in the form of launch and recovery systems for various types of drones, in the form of work tools such as cranes, or in the form of various weapon systems.

In yet another embodiment, the equipment modules 50 may have only the module setting 52 and both the module floor and any module sides as the module setting 52 can also be used to support the functional equipment which will be used separately from the equipment module itself, e.g., in the case of various types of
5 boats, such as rescue boats, work boats, and crew boats.

As illustrated in Fig. 4b the equipment modules 50 may come in various dimensions allowing multiple equipment modules 50 to be loaded onto the skidding frame 100. Although not illustrated, in other embodiments, the skidding frame 100 may be loaded with a single large equipment module 50.

10 In case of multiple equipment modules 50, 50', 50'' these may be secured to each other to ensure stability during movement. In a preferred embodiment equipment module 50 dimensions are integer multiples of each other to promote the modularity and allowing easy stacking and adjacent mounting of multiple equipment modules 50 on a single skidding frame 100. In an even more preferred embodiment the
15 dimensions of the equipment modules 50, 50', 50'' are scaled like standardised shipping containers to increase compatibility with existing systems and infrastructure. Some equipment modules 50 may have a size multiple times those of a standard 40 feet shipping container while others may be smaller, while still being integer multiples of each other's dimensions allowing them to be easily secured to
20 each other and the skidding frame 100.

Fig. 5 illustrates the activation of the elevation means 15 to elevate the skidding frame 100 to the level of the mounting surface 6 at the bottom of the ship niche 5. Elevating the skidding frame 100 to the level of the mounting surface 6 is to be understood as raising the elevation means such that the lowest point on the skidding
25 frame 100, i.e., the wheels 135 (see Fig.10) are at a height ready to engage the mounting rail 210 of the mounting footprint 200 at the mounting surface 6 at the bottom of the niche. A moored ship 1 may move slightly thus causing variation in the exact level of the ship niche but in the ideal case the mounting rails 210' of the mounting footprint 200' on the quay 5 are aligned with the mounting rails 210 of the
30 mounting footprint 200 in the ship niche when the elevation means 15 have elevated the skidding frame 100 to the level of the mounting surface 6.

In Fig. 5 the elevation means 15 are illustrated as scissor lifts, however, they may take the form of any known type of elevator capable of handling the tonnes heavy load of the equipment modules 50.

Fig. 6 illustrates the skidding frame 100 with multiple equipment modules 50 mounted on it being translated in the direction D from the elevation means 15 to the ship niche 5. Similar translation may take place when off-loading an equipment module 50 from the ship niche 5.

To allow the movement of the loaded skidding frame 100 it is first necessary to disengage and remove the securing means 220 (see Fig. 11b). This is made possible through raising means 115 (see Fig. 9) that can be activated to protrude from the lower surface 104 (see Fig. 9) of the skidding frame 100 thereby raising the frame body 101 above the elevation means 15. The securing means 220 (see Fig. 11b) can then be removed from the anchoring points 215. In embodiments where the securing means 220 are twist locks, they will first be disengaged, i.e. unlocked, before the skidding frame 100 is raised and once the skidding frame 100 is raised by the activation of the raising means 115 the twist locks can be removed. After the locking means 220 have been removed the raising means can be retracted and the skidding frame 100 thereby lowered back onto the mounting rails 210.

The wheels 135 (see Fig. 10) protruding from the lower surface 104 (see Fig. 9) of the skidding frame 100 engages the mounting rails 210,210'. The mounting rails 210,210' help guide the movement of the wheels as the skidding frame 100 is translated in the direction D between the elevation means 15 and the ship niche 5. The mounting rails 210 and the wheels 135 are thus designed to engage each other in any way which helps guide the direction of movement of the skidding frame 100 along the mounting rails 210. In one embodiment this may be done by having the mounting rails 210 have a width slightly larger than that of the wheels 135 as well as having a rail guard confines the wheels 135 to be in the mounting rails 210. In another embodiment the rail 210 may have a width narrower than that of the wheels 135 and instead have one or more ridges protruding upwards from the mounting rails 210 and engaging a trench in the wheels 135 and in that way guiding the direction of movement of the skidding frame 100. In yet another embodiment the wheels 135 may be equipped with flanges that engage the sides of a flat mounting rail 210 to guide the direction of movement of the skidding frame 100. Thus, the

mounting rails 210 help guide the skidding frame 100 into the ship niche 5 in a manner where the beams 120 are parallel to the sides of the ship niche 5 and the battens 130 are perpendicular to the sides of the moored ship 1 ensuring that the skidding frame 100 can be fully located inside the shipping niche 5. The mounting
5 rails 210 inside the ship niche 5 further ensure that the container corners 110 of the skidding frame 100 will be aligned with the positions of the securing means 220 (see Fig. 11b) of the mounting footprints 200 inside the ship niche 5.

Fig. 7 shows the skidding frame 100 with multiple equipment modules 50 fully loaded inside the ship niche 5. Once the skidding frame 100 has been transferred
10 off of the elevation means 15 and into the ship niche 5 it can be secured to the securing means 220 (see Fig. 11b) of the mounting rails 210 inside the ship niche.

In an embodiment where the securing means 220 are twist locks, they may be placed under the skidding frame 100 in a similar manner as to how they were removed from the elevation means. Firstly, the skidding frame 100 is raised by
15 activating the raising means 115 (see Fig. 9) whereby they protrude from the lower surface 104 (see Fig. 9) of the skidding frame 100 thereby raising it above the mounting surface 6. Once the skidding frame 100 is raised, securing means 220 can be placed into the anchoring points 215 of the securing footprint 200. Once the securing means 220 are in place in the anchoring points 215, the raising means 115
20 are retracted thereby lowering the skidding frame 100 back onto the securing footprint 200 and allowing the twist locks to engage the container corners 110 where they may be locked to secure the skidding frame 100 to the mounting footprint 200 of the ship niche 5. The securing means 220 keeps the skidding frame 100 and equipment modules 50 in place such that there is no risk of them moving within the
25 ship niche 5 when the ship 1 is sailing, while not needing to weld anything in place or do any other time-consuming steps. This allows the equipment modules 50 to be securely mounted in the ship niche 5 through the skidding frame 100 and securing footprint 200, while the skidding frame 100 and equipment modules 50 can just as easily be unlocked again and removed from the ship niche 5 to exchange equipment
30 modules 50.

If twist locks were placed in position for engaging the container corners 110 before the skidding frame 100 was moved into the ship niche 5 it would not be possible for the skidding frame 100 to pass the securing means 220 while moving along the

mounting rails 210,210' as the twist locks extend above the lower surface 104 of the skidding frame 100 to be able to engage the hollow inside the container corners 110. Thus, the possibility of using twist locks while at the same time being able to roll the skidding frame 100 from the elevation means 15 into the ship niche 5 is enabled by the raising means 115 (see Fig. 9) of the skidding frame 100.

In an embodiment, the raising means 115 may be integrated with the plurality of wheels 135. In such a variant the raising means raises the frame body 101 of the skidding frame 100 above the mounting surface while the plurality of wheels 135 are still engaging the mounting surface. This allows the skidding frame to move along the direction D in and out of a ship niche 5 while the frame body is raised. This allows the skidding frame 100 to pass engaging means 220 such as twist locks even though they are protruding from the mounting surface, as long as the securing means 220 are not protruding more than the frame body 101 is raised and are not located along the movement route of the plurality of wheels 135.

Once the skidding frame 100 has been moved into the ship niche 5 the elevation means 15 may be lowered and/or removed once again.

While the method and system has been described in relation to Figs. 2-7 with respect to loading a skidding frame 6 into a ship niche 5 the method and system may also be used to offload a skidding frame 100 with or without mounted equipment modules 50 from a ship niche. In the case of off-loading the elevation means 15 will first be raised and the skidding frame 100 will be released from the securing means 220 in the ship niche 5. Then the skidding frame 100 can be translated along the direction D out onto the elevation means 15. The skidding frame 100 can then be secured to the elevation means 15 which can subsequently be lowered. Once the skidding frame 100 and the one or more equipment modules 50 are on the quay 10 they can be moved and taken to where they need to be used or stored and other equipment modules 50 can be loaded onto the ship to alter its functionality.

In an embodiment, the loading and/or off-loading procedure may be automated. To enable automation one or more control units with receivers will be comprised in the skidding frame 100 and elevation means. In some embodiments, one control unit is comprised in the elevation means 15 and another control unit is comprised in the

skidding frame allowing them to be activated separately. In an automated embodiment the skidding frame will further comprise motorisation of the wheels 135 (see Fig. 10) protruding from the lower surface 104 of the battens 130 allowing them to be driven and thereby moving the skidding frame 100 along the direction D.
5 Furthermore, the raising means 115 (see Fig. 10) will be automated.

In a preferred embodiment the raising means are jacking cylinders driven by a hydraulic power unit, in other embodiments the jacking cylinders could be electrically driven. Such a hydraulic or electric power unit may in some embodiments be integrated in the skidding frame 100. In such an automated system the steps
10 may be preprogrammed and sensor equipment may further be comprised in the skidding frame 100 allowing it to determine when it is in the correct position on the respective mounting footprints 200,200' to time the activation of the raising 115 means and/or wheels 135.

In semi-automatic embodiments, the system will be controlled by an operator using
15 a remote controller to activate the motor-driven plurality of wheels 135 and thereby start and stop the translation of the skidding frame 100 as well as activating the raising means 115 to protrude and retract them to raise and lower the skidding frame 100.

In other embodiments, the wheels need not be motor driven, rather they may be
20 purely mechanical wheels easing the movement of the skidding frame 100 by an external force. The external force may be a machine or mechanical system pushing or pulling the skidding frame 100 and mounted equipment modules 50 to translate it along the direction D into and out of the ship niche 5.

Fig. 8 shows an embodiment of the skidding frame 100 in perspective from above.
25 The skidding frame comprises a multitude of beams 120 being substantially parallel to each other and a multitude of battens 130 being substantially perpendicular to the beams 120. These beams 120 and battens 130 are connected by container corners 110 which are a known standard component from shipping containers. In other embodiments some or all of the beams 120 and battens 130 may be at angles
30 to each other and some or all of these may be welded together or connected through other means than through container corners 110 as long as container corners 110

of some form are present to connect the skidding frames 100 to anchoring points of the mounting footprint and to equipment modules.

Equipment modules 50 (see Fig. 11a) may be mounted onto the upper surface 102 of the skidding frame 100 and may be secured to the skidding frame 100 at the container corners 110 using known securing means such as twist locks.

In a preferred embodiment, the skidding frame 100 is dimensioned to fit an integer number of standard shipping containers. As shown the skidding frame 100 may be divided into a number of sections 107, each of these sections allowing an equipment module 50 the size of the section 107 to be secured to it or larger equipment modules spanning multiple sections 107 to be secured to the skidding frame 100.

In an embodiment, each of these sections are 606 cm by 244 cm thereby fitting a single layer of four standard twenty feet shipping containers placed at the four sections 107 as well as accommodating standard forty feet shipping containers spanning multiple of the sections 107.

In other embodiments, the skidding frame 100 may be larger for example each section may be 490 cm by 1219 cm thereby each accommodating a standard forty feet shipping container.

In some embodiments, each section 107 is in itself a skidding frame 100 and these can be combined to create a larger skidding frame 100 consisting of multiple sections 107 as shown in Fig. 8. Being able to divide a skidding frame 100 into smaller skidding frames 100 for each section 107 and connecting them again offers more versatility. If smaller equipment modules 50 are needed, having a smaller skidding frame 100, e.g. by being able to disconnect the sections 107 not supporting any equipment modules, allows the system mounted in the ship 1 to have the least possible weight. Furthermore, having modularity in the sections 107 of the skidding frames 100 also makes it possible to make production lines more efficient as it is possible to produce fewer variants of the skidding frames 100 as they can subsequently be connected for different dimensions, rather than needing a separate production of each size of skidding frame. Additionally, being able to divide skidding frames 100 into smaller sections 107 can make the skidding frames 100 easier to

transport and store as they can be connected or disconnected to best fit the area in which they are to be stored.

Equipment modules 50 larger than standard shipping containers, e.g. a single equipment module 50 having the size of 4 standard forty feet shipment containers, are also envisioned in an embodiment, as skidding frames 100 capable of supporting such equipment modules 50.

In other embodiments, the length L of the skidding frame 100 may be anywhere in the range of 1 m to 30 m allowing it to be customised to a specific ship niche 5 (see Fig. 1) which it is intended to fit into. Similarly, the width W of the skidding frame 100 may be anywhere in the range of 1 m to 10 m. The skidding frame may be divided into multiple section 107 within this length and width or it may be a single section spanning all of the skidding frame 100.

The skidding frame 100 may be made from any material sturdy enough to support the potentially massive weight of the equipment modules 50, i.e., weights exceeding 100 tonnes. Suitable materials are for example those known from making conventional shipping containers and container corners, e.g., steel such as weathering steel, COR-TEN steel, high tensile cast steel or aluminium for lightweight systems.

Fig. 9 shows the skidding frame 100 seen from the lower surface 104. The skidding frame 100 comprises raising means 115 which may be activated to protrude from the lower surface 104 thereby raising the frame body 101 from the mounting surface the skidding frame 100 was resting on, thereby allowing securing means 220 (see Fig. 11b) to be removed or placed under the skidding frame. The raising means 115 can be retracted back into the frame body 101, thereby lowering the frame body 101 back down to let the skidding frame 100 rest on the mounting surface it was raised from.

While the frame body 101 comprising the beams 120 and battens 130 has a shared upper 102 and lower surface 104 other components comprised in the skidding frame 100 may protrude from those surfaces 102,104 rather than being flush with them. For example, the container corners 110 may protrude from either or both of the surfaces 102,104 and the plurality of wheels 135 are made to protrude from the

lower surface 104 of the frame body 101 so that the skidding frame can rest and roll on those. The raising means 115 may in one configuration protrude from the lower surface 104 and in another configuration when they are retracted into the frame body 101, they may either be flush with the lower surface 104 or they may be retracted further such that there is a hollow or indent compared the lower surface 104 of the frame body 101.

In a preferred embodiment, the raising means 115 are located in the beams 120 of the skidding frame 100. While there are six raising means illustrated in Fig. 9 other embodiments may have more or fewer raising means 115 depending on the size of the skidding frame 100 and the intended load on it. In a preferred embodiment there are raising means 115 located in the outer ends of the beams 120 adjacent to the container corners 110. Additional raising means 115 may be included along any or all of the beams 120 to ensure the necessary support and stability when the skidding frame 100 is raised and rests on the protruding raising means 115.

In a preferred embodiment the raising means 115 are hydraulic jacking cylinders. In other embodiments the raising means 115 may be jacking cylinders with a different activation such as electromechanical cylinders or the raising means could be electric actuators, or they may be hybrid actuating systems.

The skidding frame 100 further comprises a plurality of wheels 135 protruding from the lower surface 104. When the raising means 115 are retracted into the frame body 101 and the skidding frame 100 is not locked to securing means 220, the skidding frame 100 will be resting on the wheels 135. When the raising means 115 are retracted into the frame body 101 and the skidding frame 100 is locked to securing means 220 at the container corners 110, the skidding frame 100 will be resting on the engaged container corners 110.

In a preferred embodiment the wheels are located in the battens 130 oriented such that they will rotate and ease movement along the direction D, i.e. in the direction in which the battens 130 extend.

The number and size of the wheels 135 may vary for the various embodiments. In a preferred embodiment the widths of the wheels are similar to those of the battens 130 while the radius of the wheels may be determined by the height of the batten

130 from which the wheels 135 protrude. In a preferred embodiment there are wheels in all battens 130 of the skidding frame 100 but in other embodiments some battens may not have any wheels.

5 The wheels may come in various embodiments. They may be cylindrical with a smooth surface, or they may comprise flanges, ridges or trenches that allow them to engage the mounting rails 210 (see Fig. 2).

In some embodiments, the wheels 135 may also be located in one or more beams 120 having their rolling direction identical to those located in the battens 130, i.e. transverse to the extending direction of the beams 120.

10 In an embodiment, the plurality of wheels 135 may be mounted such that they are capable of swivelling thereby allowing the skidding frame 100 to be moved freely in any direction along a surface rather than only linearly back and forth.

In embodiments of the skidding frame 100 having automation and/or remote control of the raising means 115 a control unit (not shown) may be located inside the beams
15 120 where there are no raising means 115 or wheels 135. Alternatively, or in addition, control units and/or power sources may be located inside or between the sections 107 attached to the beams 120 and/or battens 130, in this case it is necessary that the control unit protrudes from neither the upper surface 102 (see Fig. 8) nor the lower surface 104. If a control unit or power source did protrude from
20 either surface it would risk getting crushed by an equipment module 50 mounted on the skidding frame 100 or by the surface on which the skidding frame 100 is placed.

Fig. 10 shows a close-up of a corner of a skidding frame 100 in perspective. While other corners may be mirrored the principle is the same. Shown in more detail is a preferred embodiment of the skidding frame 100 with a top and a bottom container
25 corner 110 having standardised holes for receiving securing means (not shown) on both the upper 102 and lower surface 104. Next to the container corner 110 raising means 115 are located in a beam 120. This placement towards the end of the beam 120 allows for stability when the raising means 115 are activated. Two of the plurality of wheels 135 are mounted in and protruding from a batten 130. The width of the
30 wheel matches the width of the batten 130 while still having enough clearance to allow free rotation of each wheel 135.

As shown in Fig. 9 there need not be raising means 115 at all junctions where beams 120 and battens 130 meet. Furthermore, raising means 115 can be located elsewhere on the beams 120 or even in the battens in regions where there are no wheels 135. Thus, Fig. 10 should only be seen as an illustration of a preferred embodiment not as the only possible solution.

Fig. 11a shows a skidding frame 100 with equipment modules 50 mounted. It is illustrated how various equipment modules 50,50' with different sizes may be arranged together on a single skidding frame 100. In the illustrated example the skidding frame 100 has equipment modules 50,50' of two different sizes mounted on it in two layers. Due to the modularity of the equipment modules 50,50' their dimensions are scaled relative to each other such that the outer edges and corners may be aligned when the equipment modules 50 are mounted on the skidding frame 100. This alignment of the equipment modules 50 allows them to be releasably secured to each other, e.g., through standard means such as twist locks that may engage ISO standard container corners 110 on both the equipment modules 50 and the skidding frame 100.

In Fig. 11a two layers of equipment modules 50 are conceptually illustrated, i.e., they are shown as module setting 52 and module floors 54 only without the actual equipment present as this equipment may take the form of any tool that it might be beneficial to mount in a ship niche (see Fig. 1). Equipment in the modules can for example be, but is not limited to:

- Smaller vessels such as rescue boats, work boats and crew boats.
- Drone launch and recovery stations
- Cranes or other heavy-duty machinery for towing, mooring, or lifting.
- Gangways for ship-to-ship or ship-to-shore use
- Weapons systems
- Accommodations such as offices, laboratory space, pre-hospitals or passenger space.
- Emergency equipment such as firefighting systems or hazmat modules.

While Fig. 11a illustrates five equipment modules 50 being mounted on a skidding frame 100, it is important to note that a significant benefit of the equipment modules 50 is that different equipment modules can be secured to the skidding frame 100,

e.g. there may be more or fewer and they may have different dimensions. For example, there could be only a single layer of equipment modules 50, or multiple layers only on half of the skidding frame 100 or a single large equipment module 50 spanning the entirety of the skidding frame 100. This modularity provides flexibility and allows both customisability and the opportunity of benefitting from standard equipment. For example, the number if stacked equipment modules 50 may be made to fit the height of the ship niche (see Fig. 6). Some equipment modules 50 may have standardised equipment that can support various types of equipment in other equipment modules 50 such as launch pads or support structures that can function with various types of vehicles, vessels or drones.

The equipment modules 50 are in a preferred embodiment dimensioned like standard shipping containers. In other embodiment they may have custom dimensions to fit specific ship niches. The equipment modules 50 may have sides, i.e. be completely closed off aside from doors or gates and in other embodiments they may be open comprising only module setting 52 or a combination of module setting 52 and module floors 54 for supporting the specific equipment in the equipment module 50.

Having equipment modules 50 dimensioned like standard shipping containers and skidding frames 100 that match these has the benefit of allowing easy transport of the equipment modules 50 and/or skidding frames 100 to and from the ship 1 (see Fig. 1). An extensive infrastructure already exists for the transport of shipping containers, e.g., on trains, trucks and planes, this makes it easy to get equipment modules 50 and/or skidding frames 100 distributed or delivered to the locations where they are needed to get them on the ships or to transport them on land once the ship has reached its destination.

Fig. 11b shows a close-up of a preferred embodiment of securing of the equipment modules 50 to the skidding frame 100. While shown only for a single corner, the principle is the same for the preferred securing of all equipment modules 50 to the skidding frame 100. Furthermore, the same principle is used for the preferred securing method of securing equipment modules 50,50' to each other as well as for securing the skidding frame 100 to the mounting footprint 200 (see Fig. 3).

In the illustrated embodiment both the skidding frame 100 and the equipment module 50 comprise container corners 110. These container corners 110 are preferably ISO standard container corners allowing them to be used with any securing means 220 designed for this standard, such as twist locks. When an equipment module 50 is to be secured to the skidding frame 100 the container corners 110,110' are aligned with each other and placed gravitationally one above the other with the securing means 220 in between. Each side of the securing means 220 is the capable of engaging the hollows of the respective container corners 110,110' and when the securing means 220 is engaged the container corners 110,110' are positionally fixed with respect to each other.

In a preferred embodiment the securing means 220 are releasable, such as for twist locks, allowing the equipment modules 50 to disengage the skidding frame 100 and/or each other.

While not shown in Fig. 11b the skidding frame 100 may similarly be fixed to a mounting footprint 200 (see Fig. 2) using a securing means 220 engaging the container corner 110 of the skidding frame 100 and the anchoring point 215 of the mounting footprint 200. In the shown illustration the skidding frame is not fixed to a mounting footprint and the raising means 115 (see Fig. 9) are not protruding from the skidding frame 100 thus the wheels 135 are the lowest point of the skidding frame 100 on which it rests.

CLAIMS

1. A system for connecting equipment to a mounting surface of a sea vessel, such as a ship or submarine or any other marine vessel, said system comprising:
- a skidding frame comprising a frame body, said frame body comprising an upper and a lower surface,
 - a mounting footprint secured to said mounting surface and adapted to releasably engage said lower surface of said skidding frame, and
 - one or more equipment modules for containing equipment, wherein said one or more equipment modules are adapted to be attached to said upper surface of said skidding frame, whereby said equipment modules are indirectly connected to said mounting surface via said skidding frame.
2. A system according to claim 1, wherein said equipment modules are permanently attached to the upper surface of said skidding frame.
3. A system according to claim 1, wherein said equipment modules are releasably attached to the upper surface of said skidding frame through securing means.
4. A system according to claim 3, wherein multiple equipment modules are releasably attached to the upper surface of said skidding frame.
5. A system according to claim 4, wherein and said multiple equipment modules are releasably attached to each other using securing means.
6. A system according to any of the previous claims, wherein said mounting footprint comprises a number of anchoring points and said skidding frame comprises a number of engaging anchoring points.
7. A system according to claim 6, wherein and said anchoring points comprises said securing means.
8. A system according to any of one of claims 3-7, wherein said securing means are twist locks.
9. A system according to any of claims 6-8, wherein said skidding frame comprises a frame body, having two or more parallel battens and two or more parallel frame beams, said battens being substantially perpendicular to said beams.

10. A system according to claim 9, wherein said frame body comprises a number of said anchoring points arranged at corners of said frame body.

11. A system according to any of claims 9 or 10, wherein said frame body comprises a number of anchoring points arranged on said battens and/or said frame beams
5 between said corners of said frame body.

12. A system according to any of the previous claims, wherein said skidding frame consists of a multiple of sections, said sections being smaller skidding frames that can be disconnected and connected.

13. A skidding frame according to claim 1 wherein said skidding frame comprises:

- 10
- a frame body, comprising two or more parallel battens and two or more parallel frame beams, said battens being substantially perpendicular to said beams, and
 - a plurality of anchoring points.

14. A skidding frame according to claim 13, wherein said frame body comprises a
15 number of anchoring points arranged at corners of said frame body and a number of anchoring points arranged on said battens and/or said frame beams between said corners of said frame body.

15. A skidding frame according to any of claims 13 or 14, wherein said skidding frame consists of a multiple of sections, being smaller skidding frames, that can be
20 disconnected and connected.

16. A mounting footprint according to claim 1 comprising:

- one or more anchoring points, and
- one or more securing means adapted to be releasably mounted in said anchoring points and adapted for engaging container corners.

25 17. A method of sideways loading a skidding frame for supporting equipment modules, onto a mounting surface of a sea vessel, such as a ship or submarine or any other marine vessel, and securing it to a mounting footprint of said mounting surface, said method comprising the steps of:

- securing said skidding frame to elevation means, such as a lift,

- subsequently raising said elevation means to elevate said skidding frame to a level above said mounting surface,
- once said skidding frame is at a level above said mounting surface, sideways conveying said skidding frame onto said mounting footprint,
- 5 - engaging securing means to secure said skidding frame to said mounting footprint of the mounting surface.